ESC/VP21 Command User's Guide for Home Projectors

Table of Contents

1. Introduction to ESC/VP21 3
2. ESC/VP21 Command Formats 4
3. Applicable models 5
4. Command Table 5
5. Appendix 8
6. Revision History 9

Copyright Notice:

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of SEIKO EPSON CORPORATION. No patent liability is assumed with respect to the use of the information contained herein. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Neither SEIKO EPSON CORPORATION nor its affiliates shall be liable to the purchase of this product or third parties for damages, losses, costs, or expenses incurred by purchaser or third parties as a result of: accident, misuse, or abuse of this product or unauthorized modifications, repairs, or alterations to this product, or (excluding the U.S.) failure to strictly comply with SEIKO EPSON CORPORATION(s operating and maintenance instructions.

SEIKO EPSON CORPORATION shall not be liable against any damages or problems arising from the use of any options or any consumable products other than those designated as Original EPSON Products or EPSON Approved Products by SEKO EPSON CORPORATION.

EPSON is a registered trademark of SEIKO EPSON CORPORATION. EasyMP is a trademark of SEIKO EPSON CORPORATION. Macintosh, Mac, and iMac are registered trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Windows and Windows NT are registered trademarks of Microsoft Corporation in the United States of America.

General Notice:

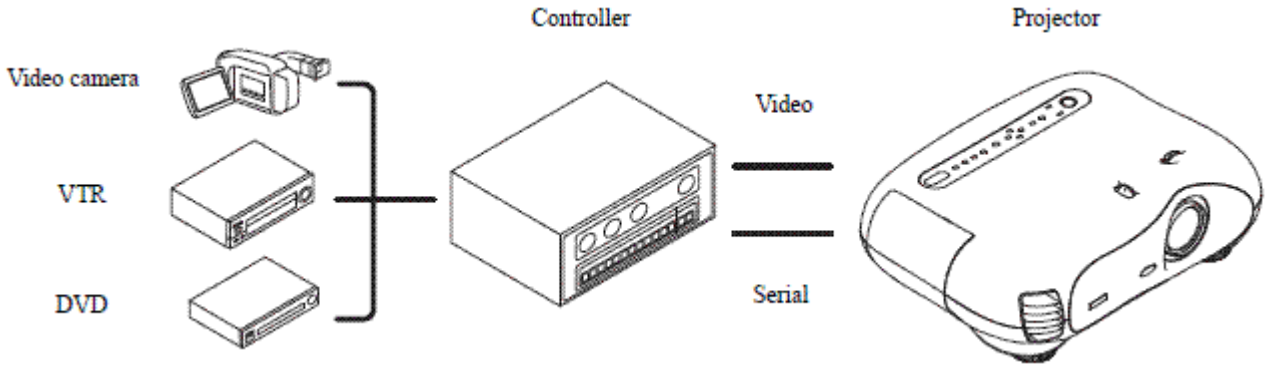
Other product names used herein are also for identification purposes only and may be trademarks of their respective owner. EPSON disclaims any and all rights in those marks.

©SEIKO EPSON CORPORTION 2003-2011. All rights reserved.

1. Introduction to ESC/VP21

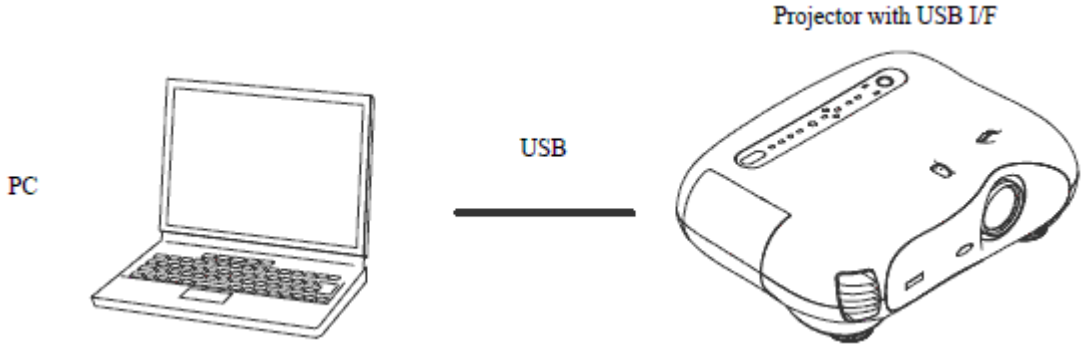
ESC/VP21 is a control command and protocol for Epson projectors, which is used for A/V controller to control and monitor Epson projectors. The command codes are comprised of ASCII codes. Therefore the command codes can be understood very easily and you can easily control projectors using a PC with a terminal emulator such as Microsoft Hyper terminal.
Since ESC/VP21 is independent of communication protocols. Serial, USB or TCP/IP network can be used to transmit the commands to projectors.

* Serial connection
A/V controller normally use as serial connection to control projectors. Refer to Appendix for details.



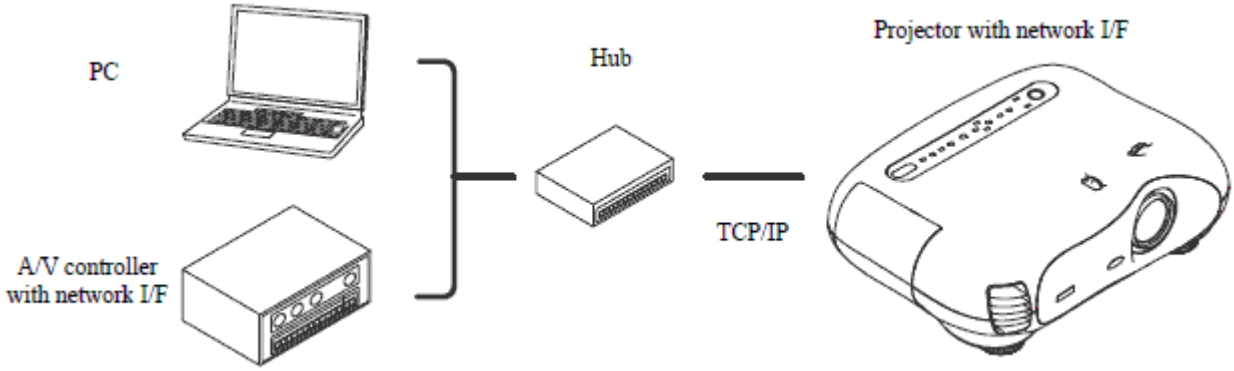
* USB connection

A USB interface can be used to control a projector. Refer to Appendix for details.



* Network connection

After establishing a TCP session, ESC/VP21 commands can be sent to projectors. Refer to ESC/VP.net protocol manual



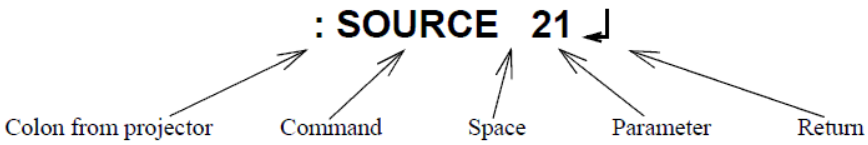
2. ESC/VP21 Command Formats

2.1. Set command format

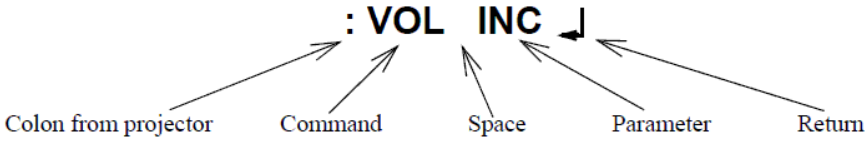
A set command consists of a command and a parameter. Projector returns a colon after executing the command. There are two types of parameters. One is fixed such as ON, OFF, or 21. Other is a step parameter such as INC, DEC or INIT.

INC: increments the parameter by one.
DEC: decrements the parameter by one.
INIT: initializes the parameter.

Set command example 1



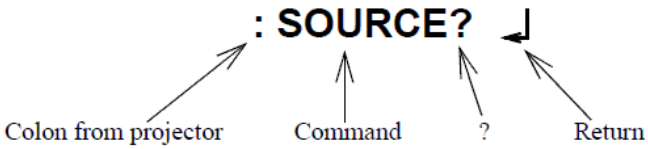
Set command example 2



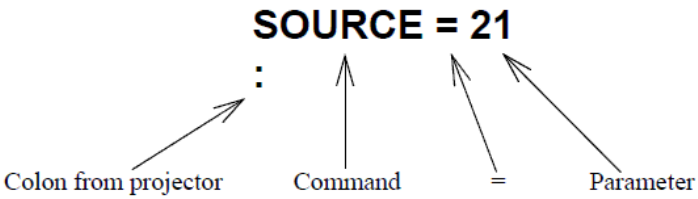
2.2. Get command format

A get command consists of a command and ?. Projector returns a response parameter after executing the command.

Get command example



Response parameter example



2.3. Null command

The null command is as command code of the return key code (Hex 0D). Projector returns a colon。The null command can be used to confirm that the projector is in operation.

2.4. Illegal commands

Projector returns "ERR" and a return key code (Hex 0D) and a colon when it receives invalid commands.

ERR

:

3. Applicable models

ELP-TW100/TW100H/TS10, EMP-TW10/TW200/TW500/TW10H/TW200H/TW20/TW600/TW520/TW550/ TW800/TW700/TW1000/TW2000, EH-TW2800/TW2900/TW3000/TW3200/TW3500/TW3600/TW3800/ TW4000/TW4400/TW4500/ TW5000/TW5500 TW5800/, EH-TW420/TW450, PL-HomeCinema400/700/720/1080/1080UB/705HD/6100/6500UB/8100/8345/8350/8500UB, PL-ProCinema800/810/1080/1080UB/7100/7500UB/9100/9350/9500UB

4. Command Table

Command		Command Models	All Models
PWR ON	ON	PWR ON	Available (*1)
	OFF	PWR OFF	Available
PWR OFF (note4)	ON	MUTE ON	Available
	OFF	MUTE OFF	Available
SOURCE (note3)	Black	MSEL 00	Available
	Blue	MSEL 01	Available
	User Logo	MSEL 02	Available (*2)

(*1)The "PWR ON" command for TW200 and TW200H needs to prepare for use. First step is to turn on the projector. And then send the "SPWRLVL 01" command to the projector after the status of projector goes into the condition that the projector can receive ESC/VP21 command.
Second steps is to turn off the projector once. The "PWR ON" can work on TW200 and TW200H after the status of projector becomes the standby state.
•TW500 needs to change the setting item to use "PWR ON" command. To validate the "PWR ON" command of TW500, "Network Monitoring" of "Operation" in "Setting" menu must be set to ON. The "PWR ON" command can work on TW500 after the projector is turned off once and the status of projector becomes the standby state.

(*2)TW10/TW10H does not support the User Logo function.

Item	Terminal	Signal name	Command	TW100/ 100H	TS10	TW10/ 10H	TW200/ 200H	TW500
Source change	INPUT 1/A	Cyclic within "SOURCE 1x"	SOURCE 10	OK	OK	OK(*3)	OK	OK
		Analog RGB	SOURCE 11	OK	OK	-	-	OK
		Digital RGB	SOURCE 12	-	OK	-	-	-
		RGB Video	SOURCE 13	-	OK	OK	OK	OK
		YCbCr (*4 Component)	SOURCE 14	-	-	OK	OK	OK
		YPbPr (*4 Component)	SOURCE 15	-	-	OK	OK	OK
		Auto	SOURCE 1F	-	-	-	-	OK
	INPUT 2/B	Cyclic within "SOURCE 2x"	SOURCE 20	OK	OK	OK(*3)	OK	OK
		Analog RGB	SOURCE 21	OK	OK	OK	OK	OK
		RGB Video	SOURCE 22	-	OK	-	-	-
		YCbCr (*5 Component)	SOURCE 23	OK	OK	-	-	OK
		YPbPr (*5 Component)	SOURCE 24	OK	OK	-	-	OK
		YPbPr	SOURCE 25	-	-	-	-	OK
		Auto	SOURCE 2F	-	-	-	-	OK
	INPUT 3	Cyclic within "SOURCE 3x"	SOURCE 30	-	-	-	-	OK
		Digital RGB	SOURCE 31	OK	-	-	-	-
	INPUT 5	Cyclic within "SOURCE Cx"	SOURCE C0	-	-	-	OK	OK
		YCbCr	SOURCE C4	-	-	-	OK	OK
		YPbPr	SOURCE C5	-	-	-	OK	OK
		Auto	SOURCE CF	-	-	-	-	OK
	VIDEO	Cyclic within "SOURCE 4x"	SOURCE 40	OK	OK	OK	OK	OK
	VIDEO (RCA)	<=	SOURCE 41	OK	OK	OK	OK	OK
	VIDEO (S)	<=	SOURCE 42	OK	OK	OK	OK	OK
	VIDEO (YCbCr)	<=	SOURCE 43	OK	-	-	-	-
	VIDEO (YPbPr)	<=	SOURCE 44	OK	-	-	-	-

Item	Terminal	Signal name	Command	TW20	TW600	TW700	TW1000	TW2000
Source change	INPUT 1/A	Cyclic within "SOURCE 1x"	SOURCE 10	OK	OK	OK	OK	OK
		Analog RGB	SOURCE 11	-	-	-	-	-
		Digital RGB	SOURCE 12	-	-	-	-	-
		RGB Video	SOURCE 13	OK	-	-	-	-
		YCbCr (*4 Component)	SOURCE 14	OK	OK	OK	OK	OK
		YPbPr (*4 Component)	SOURCE 15	OK	OK	OK	OK	OK
		Auto	SOURCE 1F	-	OK	OK	OK	OK
	INPUT 2/B	Cyclic within "SOURCE 2x"	SOURCE 20	OK	OK	OK	OK	OK
		Analog RGB	SOURCE 21	OK	OK	OK	OK	OK
		RGB Video	SOURCE 22	-	-	-	-	-
		YCbCr (*5 Component)	SOURCE 23	-	-	-	-	-
		YPbPr (*5 Component)	SOURCE 24	-	-	-	-	-
		YPbPr	SOURCE 25	-	-	-	-	-
		Auto	SOURCE 2F	-	-	-	-	-
	INPUT 3	Cyclic within "SOURCE 3x"	SOURCE 30	-	OK	OK	OK	OK
		Digital RGB	SOURCE 31	-	-	-	-	-
	INPUT 5	Cyclic within "SOURCE Cx"	SOURCE C0	-	OK	OK	OK	-
		SCART (*6)	SOURCE C3	-	OK	OK	OK	-
		YCbCr	SOURCE C4	-	OK	OK	OK	-
		YPbPr	SOURCE C5	-	OK	OK	OK	-
		Auto	SOURCE CF	-	OK	OK	OK	-
	HDMI2	HDMI	SOURCE A0	-	-	-	-	OK
	VIDEO	Cyclic within "SOURCE 4x"	SOURCE 40	OK	OK	OK	OK	OK
	VIDEO (RCA)	<=	SOURCE 41	OK	OK	OK	OK	OK
	VIDEO (S)	<=	SOURCE 42	OK	OK	OK	OK	OK
	VIDEO (YCbCr)	<=	SOURCE 43	-	-	-	-	-
	VIDEO (YPbPr)	<=	SOURCE 44	-	-	-	-	-

Item	Terminal	Signal name	Command	TW2800 TW3000 TW3800 HC6100 PC7100	TW4000/ HC6500U B	TW5000/ PC7500U B	TW2900 TW3500 HC8100 PC9100	TW4400 TW4500 HC8500UB
Source change	INPUT 1/A	Cyclic within "SOURCE 1x"	SOURCE 10	OK	OK	OK	OK	OK
		Analog RGB	SOURCE 11	-	-	-	-	-
		Digital RGB	SOURCE 12	-	-	-	-	-
		RGB Video	SOURCE 13	-	-	-	-	-
		YCbCr (*4 Component)	SOURCE 14	OK	OK	OK	OK	OK
		YPbPr (*4 Component)	SOURCE 15	OK	OK	OK	OK	OK
		Auto	SOURCE 1F	OK	OK	OK	OK	OK
	INPUT 2/B	Cyclic within "SOURCE 2x"	SOURCE 20	OK	OK	OK	OK	OK
		Analog RGB	SOURCE 21	OK	OK	OK	OK	OK
		RGB Video	SOURCE 22	-	-	-	-	-
		YCbCr (*5 Component)	SOURCE 23	-	-	-	-	-
		YPbPr (*5 Component)	SOURCE 24	-	-	-	-	-
		YPbPr	SOURCE 25	-	-	-	-	-
		Auto	SOURCE 2F	-	-	-	-	-
	INPUT 3	Cyclic within "SOURCE 3x"	SOURCE 30	OK	OK	OK	OK	OK
		Digital RGB	SOURCE 31	-	-	-	-	-
	INPUT 5	Cyclic within "SOURCE Cx"	SOURCE C0	-	-	-	-	-
		YCbCr	SOURCE C4	-	-	-	-	-
		YPbPr	SOURCE C5	-	-	-	-	-
		Auto	SOURCE CF	-	-	-	-	-
	HDMI2	HDMI	SOURCE A0	OK	OK	OK	OK	OK
	VIDEO	Cyclic within "SOURCE 4x"	SOURCE 40	OK	OK	OK	OK	OK
	VIDEO (RCA)	<=	SOURCE 41	OK	OK	OK	OK	OK
	VIDEO (S)	<=	SOURCE 42	OK	OK	OK	OK	OK
	VIDEO (YCbCr)	<=	SOURCE 43	-	-	-	-	-
	VIDEO (YPbPr)	<=	SOURCE 44	-	-	-	-	-

Item	Terminal	Signal name	Command	TW5500 PC9500UB	TW420 HC700	TW450 HC705HD	TW3200 TW3600 HC8350 HC8345 PC9350	
Source change	INPUT 1/A	Cyclic within "SOURCE 1x"	SOURCE 10	OK	OK	OK	OK	
		Analog RGB	SOURCE 11	-	OK	OK	-	
		Digital RGB	SOURCE 12	-	-	-	-	
		RGB Video	SOURCE 13	-	-	-	-	
		YCbCr (*4 Component)	SOURCE 14	OK	OK(*7)	OK(*7)	OK	
		YPbPr (*4 Component)	SOURCE 15	OK	-	-	OK	
		Auto	SOURCE 1F	OK	OK	OK	OK	
	INPUT 2/B	Cyclic within "SOURCE 2x"	SOURCE 20	OK	-	-	OK	
		Analog RGB	SOURCE 21	OK	-	-	OK	
		RGB Video	SOURCE 22	-	-	-	-	
		YCbCr (*5 Component)	SOURCE 23	-	-	-	-	
		YPbPr (*5 Component)	SOURCE 24	-	-	-	-	
		YPbPr	SOURCE 25	-	-	-	-	
		Auto	SOURCE 2F	-	-	-	-	
	INPUT 3	Cyclic within "SOURCE 3x"	SOURCE 30	OK	OK	OK	OK	
		Digital RGB	SOURCE 31	-	-	-	-	
	INPUT 5	Cyclic within "SOURCE Cx"	SOURCE C0	-	-	-	-	
		YCbCr	SOURCE C4	-	-	-	-	
		YPbPr	SOURCE C5	-	-	-	-	
		Auto	SOURCE CF	-	-	-	-	
	HDMI2	HDMI	SOURCE A0	OK	-	-	OK	
	VIDEO	Cyclic within "SOURCE 4x"	SOURCE 40	OK	-	OK	OK	
	VIDEO (RCA)	<=	SOURCE 41	OK	OK	OK	OK	
	VIDEO (S)	<=	SOURCE 42	OK	OK	OK	OK	
	VIDEO (YCbCr)	<=	SOURCE 43	-	-	-	-	
	VIDEO (YPbPr)	<=	SOURCE 44	-	-	-	-	

(*3)Only when **TW10** is connected, the source is not cycled within a signal that can select on a terminal by these commands.
(*4)This signal is selected when **TW10 and TW20** is connected.
(*5)This signal is selected when **TW500** is connected.
(*6)This signal is selected when **TW600/520/550/800/700/1000** is connected.
(*7)This command is can be used only for get.

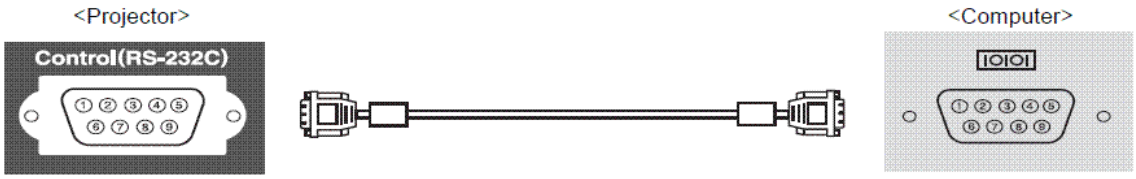
5. Appendix

5.1. Communication specification

A projector and a computer can be connected using a serial or USB port. The projector can be remotely controlled by sending commands to the projector.

Serial Connection
(TW100,TS10,TW10,TW200,TW500,TW10H,TW200H,TW20,TW600/520/550/800,TW700,TW1000,TW2000,
PL-HomeCinema400/700/720/1080/1080UB/705HD/6100/6500UB/8100/8345/8350/8500UB, TW450, TW420
PL-ProCinema800/810/1080/1080UB/7100/7500UB/9100/9350/9500UB)

- Select RS-232C at Advanced Setting of the Menu.
- Communication condition
  Baud rate : 9600bps
  Data length : 8 bits
  Parity : No
  Stop bit : 1 bit
  Flow control : No
- Connector : D-Sub 9pin
- Projector input : Control(RS-232C)



Projector		PC serial cable	Computer	
GND	5	———	5	GND
RD	2	◄———	3	TD
TD	3	———►	2	RD

Signal name	Function
GND	Common ground
TD	Transmitted data
RD	Received data

6. Revision History

Revision	Issued date	Page	Description
A	Oct 19,2005	All pages	First Release
B	Sep 29,2006	All pages	Addition of TW700
C	Mar 19,2007	All pages	Addition of TW1000
D	Jun 4,2007	All pages	Correction of "Applicable Model".
E	Dec 14,2007	All pages	Addition of TW2000
F	Nov 14,2008	All pages	Addition of TW3000 and TW4000
G	Dec 2, 2008	All pages	Addition of TW5000 and TW420
H	Mar 11, 2010	All pages	Addition of TW2900/3500/HomeCinema8100/ProCinema9100, TW4400/TW4500/HomeCinema8500UB/ProCinema9500UB TW450/HomeCinema705HD
I	June 22, 2011	All pages	Addition of EH-TW3200/TW3600, PL-HomeCinema 8345/8350, PL-ProCinema9350